Title

Toward advanced powertrain control technologies based on models

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Abstract

Powertrain control technologies of vehicles are important for carbon neutrality. The powertrain system is getting more complicated for its hybridization, and an internal combustion engine is also a complicated component itself in nature. The control system is also becoming complicated and the conventional control framework using look-up tables based on a huge number of experiments is difficult to continue. Furthermore, the framework of control is changing, as it is now possible to control the powertrain using and combining a variety of information, including connected data and driver's data. Model-based control system is more useful and essential to combine different things, disciplines and researchers for advanced powertrain control. In this presentation, I will introduce our research activities on advanced control systems of automobiles based on models.

Biography

Yudai Yamasaki is a Professor in Department of Human Engineered Environmental Studies, Graduate school of Frontier Sciences, at The University of Tokyo. He received his Ph.D. degree from Keio University in 2003, Ph.D. thesis was "Study on ignition and combustion mechanism of HCCI engine". Oct. 2003, he joined as a researcher in Dept. of Mechanical Engineering, The University of Tokyo, where he engaged in developing engine control systems using biomass resources. His research interests include engine combustion and its control, alternative fuel, chemical reaction in ICE, combustion analysis and diagnostic, and distributed energy systems. Recently he is also challenging on applying AI technology to powertrain systems, considering human factors, and using connected information for advanced powertrain control. He was also responsible for developing a control-oriented model and managing a control group in a national project SIP (Cross-ministerial Strategic Innovative Promotion Program) from 2014 to 2019. Now, he is also promoting several collaborative works related to powertrain control systems with AICE (The Research association of Automotive Internal Combustion Engines).